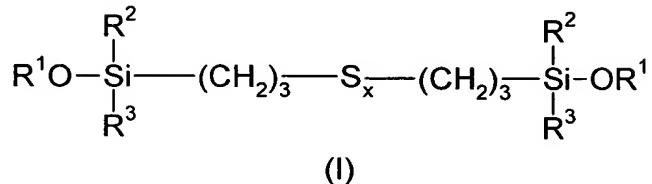


CLAIMS

We claim:

5 1. A tire incorporating an elastomeric composition based on a diene elastomer, a reinforcing inorganic filler and a bis-alkoxysilane tetrasulfide wherein said alkoxysilane satisfies the formula (I):



in which:

10 the symbols R¹, which may be identical or different, each represent a monovalent hydrocarbon group selected from among alkyls, whether straight-chain or branched, having from 1 to 4 carbon atoms, and alkoxyalkyls, whether straight-chain or branched, having from 2 to 8 carbon atoms;

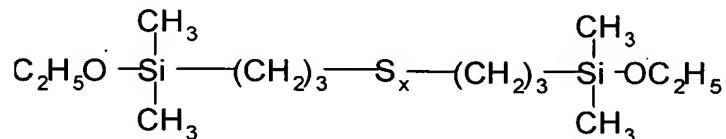
15 the symbols R² and R³, which may be identical or different, each represent a monovalent hydrocarbon group selected from among alkyls, whether straight-chain or branched, having from 1 to 6 carbon atoms, and the phenyl radical; and
x is between about 3 and about 5.

20 2. The tire according to Claim 1, wherein:

the symbols R¹ are selected from among the group consisting of methyl, ethyl, n-propyl, and isopropyl;

25 R² and R³ are selected from among the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, n-hexyl, and phenyl.

3. The tire according to Claim 2, wherein the alkoxysilane is the bis-monoethoxydimethylsilylpropyl tetrasulfide of formula (III):



(III) (abbreviated to MESPT)

30 4. The tire according to Claim 3, wherein x lies within a range from about 3.5 to about 4.5.

5. The tire according to Claim 1, wherein the diene elastomer is selected from among the group consisting of polybutadienes, natural rubber, synthetic polyisoprenes, butadiene copolymers, isoprene copolymers, and mixtures of these elastomers.

6. The tire according to Claim 5, wherein the butadiene or isoprene copolymer is selected from among the group consisting of butadiene-styrene copolymers, butadiene-isoprene copolymers, isoprene-styrene copolymers, butadiene-styrene-isoprene copolymers, and mixtures of these copolymers.

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7. The tire according to Claim 5, wherein the diene elastomer is a butadiene-styrene copolymer (SBR) having a styrene content of between about 20% and about 30% by weight, a content of vinyl bonds of the butadiene fraction of between about 15% and about 65%, a content of trans-1,4 bonds of between about 20% and about 75%, and a glass transition temperature of between about -20°C and about -55°C.

10

8. The tire according to Claim 7, wherein the SBR is an SBR prepared in solution (SSBR).

15

9. The tire according to Claim 7, wherein the SBR is used in a mixture with a polybutadiene having more than about 90% cis-1,4 bonds.

20

10. The tire according to Claim 5, wherein the diene elastomer is an isoprene elastomer.

25

11. The tire according to Claim 1, wherein the composition comprises between about 10 and about 200 phr (parts by weight per hundred parts of elastomer) of said reinforcing inorganic filler.

30

12. The tire according to Claim 1, wherein the quantity of alkoxy silane is between about 1 and about 20 phr.

35

13. The tire according to Claim 1, wherein the quantity of alkoxy silane represents between about 0.5 and about 20% by weight relative to the quantity of reinforcing inorganic filler.

40

14. The tire according to Claim 1, wherein the inorganic filler has a BET specific surface area of between about 60 and about 250 m²/g.

45

15. The tire according to Claim 1, wherein the inorganic filler comprises between about 50% and up to 100% silica.

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16. The tire according to Claim 1, wherein the inorganic filler forms the entire reinforcing filler.

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17. The tire according to Claim 1, wherein the reinforcing inorganic filler is used in a mixture with carbon black.

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18. The tire according to Claim 17, wherein the carbon black is present in an amount of between about 2 and about 20 phr.

65

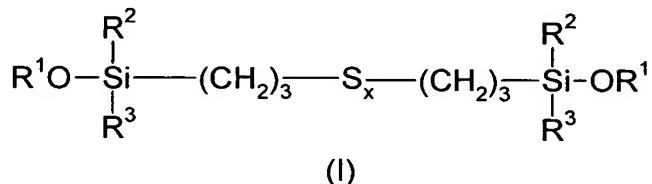
19. The tire according to Claim 18, wherein the carbon black is present in an amount within a range from about 5 to about 15 phr.

20. The tire according to Claim 1, wherein said elastomeric composition is incorporated in part of the tire selected from among the group consisting of the tread, the underlays, the crown reinforcement plies, the sidewalls, the carcass reinforcement plies, the beads and the protectors.

5

21. The tire according to Claim 1, wherein said tire is vulcanized.

22. A tire tread incorporating an elastomeric composition based on a diene elastomer, a reinforcing inorganic filler and a bis-alkoxysilane tetrasulfide wherein said alkoxysilane satisfies the formula (I):



in which:

15 the symbols R¹, which may be identical or different, each represent a monovalent hydrocarbon group selected from among alkyls, whether straight-chain or branched, having from 1 to 4 carbon atoms and alkoxyalkyls, whether straight-chain or branched, having from 2 to 8 carbon atoms;

20 the symbols R² and R³, which may be identical or different, each represent a monovalent hydrocarbon group selected from among alkyls, whether straight-chain or branched, having from 1 to 6 carbon atoms, and the phenyl radical; and

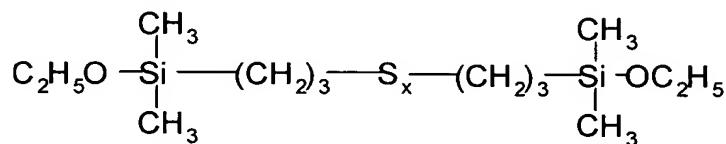
x is between about 3 and about 5.

23. The tread according to Claim 22, wherein:

25 the symbols R¹ are selected from among the group consisting of methyl, ethyl, n-propyl, and isopropyl;

R² and R³ are selected from among the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, n-hexyl, and phenyl.

30 24. The tread according to Claim 23, wherein the alkoxysilane is the bis-monoethoxydimethylsilylpropyl tetrasulfide of formula (III):



(III) (abbreviated to MESPT)

25. The tread according to Claim 24, wherein x lies within a range from about 3.5 to about 4.5.

35

26. The tread according to Claim 22, wherein the diene elastomer is selected from among the group consisting of polybutadienes, natural rubber, synthetic polyisoprenes, butadiene copolymers, isoprene copolymers, and mixtures of these elastomers.

5 27. The tread according to Claim 26, wherein the butadiene or isoprene copolymers is selected from among the group consisting of butadiene-styrene copolymers, butadiene-isoprene copolymers, isoprene-styrene copolymers, butadiene-styrene-isoprene copolymers, and mixtures of these copolymers.

10 28. The tread according to Claim 26, wherein the diene elastomer is a butadiene-styrene copolymer (SBR) having a styrene content of between about 20% and about 30% by weight, a content of vinyl bonds of the butadiene fraction of between about 15% and about 65%, a content of trans-1,4 bonds of between about 20% and about 75%, and a glass transition temperature of between about -20°C and about -55°C.

15 29. The tread according to Claim 28, wherein the SBR is an SBR prepared in solution (SSBR).

20 30. The tread according to Claim 28, wherein the SBR is used in a mixture with a polybutadiene having more than about 90% cis-1,4 bonds.

31. The tread according to Claim 26, wherein the diene elastomer is an isoprene elastomer.

25 32. The tread according to Claim 26, wherein said tread is vulcanized.

33. The tread according to Claim 22, wherein the composition comprises between about 10 and about 200 phr (parts by weight per hundred parts of elastomer) of said reinforcing inorganic filler.

30 34. The tread according to Claim 22, wherein the quantity of alkoxy silane is between about 1 and about 20 phr.

35 35. The tread according to Claim 22, wherein the quantity of alkoxy silane represents between about 0.5 and about 20% by weight relative to the quantity of reinforcing inorganic filler.

36. The tread according to Claim 22, wherein the inorganic filler has a BET specific surface area of between about 60 and about 250 m²/g.

40 37. The tread according to Claim 22, wherein the inorganic filler comprises between about 50% and up to 100% of silica.

45 38. The tread according to Claim 22, wherein the inorganic filler forms the entire reinforcing filler.

39. The tread according to Claim 22, wherein the reinforcing inorganic filler is used in a mixture with carbon black.

40. The tread according to Claim 39, wherein the carbon black is present in an amount of
5 between about 2 and about 20 phr.

41. The tread according to Claim 40, wherein the carbon black is present in an amount within a range from about 5 to about 15 phr.

10 42. A process for preparing a tire or a tire tread having accelerated vulcanization kinetics, incorporating a sulfur-vulcanizable elastomeric composition based on a reinforcing inorganic filler, wherein said process comprises the following steps:

15 incorporating into a diene elastomer, in a mixer:
 a reinforcing inorganic filler;
 a bis-alkoxysilane tetrasulfide;

20 thermomechanically kneading the entire mixture, in one or more stages, until a maximum temperature of between about 110°C and about 190°C is reached;
 cooling the entire mixture to a temperature of less than about 100°C;
 then incorporating a vulcanization system;

25 kneading the entire mixture until a maximum temperature less than about 110°C is reached;
 calendering or extruding the elastomeric composition thus obtained into the form of a tire tread or a rubber profiled element incorporated as semi-finished product in the tire,

wherein said alkoxysilane satisfies formula (I):

$$\begin{array}{c}
 \text{R}^2 \\
 | \\
 \text{R}^1\text{O}-\text{Si}-\text{(CH}_2)_3-\text{S}_x-\text{(CH}_2)_3-\text{Si}-\text{OR}^1 \\
 | \qquad | \\
 \text{R}^3 \qquad \text{R}^3
 \end{array}
 \quad (\text{I})$$

in which:

30 the symbols R¹, which may be identical or different, each represent a monovalent hydrocarbon group selected from among the group consisting of alkyls, whether straight-chain or branched, having from 1 to 4 carbon atoms, and alkoxyalkyls, whether straight-chain or branched, having from 2 to 8 carbon atoms;

35 the symbols R² and R³, which may be identical or different, each represent a monovalent hydrocarbon group selected from among the group consisting of alkyls, whether straight-chain or branched, having from 1 to 6 carbon atoms, and the phenyl radical; and

x is between about 3 and about 5.

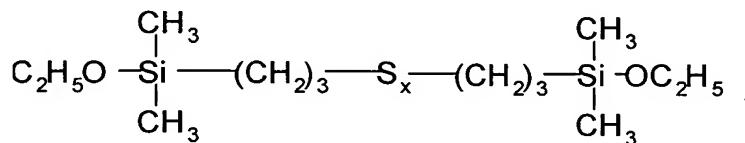
40 43. The process according to Claim 42, wherein:

the symbols R¹ are selected from among the group consisting of methyl, ethyl, n-propyl, and isopropyl;

R² and R³ are selected from among the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, n-hexyl, and phenyl.

5

44. The process according to Claim 43, wherein the alkoxy silane is the bis-monoethoxydimethylsilylpropyl tetrasulfide of formula (III):



(III) (abbreviated to MESPT)

10 45. The process according to Claim 44, wherein x lies within a range from about 3.5 to about 4.5.

46. The process according to Claim 42, wherein the diene elastomer is selected from among the group consisting of polybutadienes, natural rubber, synthetic polyisoprenes, butadiene copolymers, isoprene copolymers, and mixtures of these elastomers.

15

47. The process according to Claim 42, wherein the quantity of the reinforcing inorganic filler is between about 10 and about 200 phr and the quantity of the alkoxy silane is between about 1 and about 20 phr.

20

48. The process according to Claim 42, wherein the inorganic filler has a BET specific surface area of between about 60 and about 250 m²/g.

49. The process according to Claim 42, wherein the inorganic filler comprises between about 50% and up to 100% silica.

25

50. The process according to Claim 42, wherein the inorganic filler is the entire reinforcing filler.

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51. The process according to Claim 42, wherein the reinforcing inorganic filler is used in mixture with carbon black.

52. The process according to Claim 51, wherein the carbon black is present in an amount of between about 2 and about 20 phr.

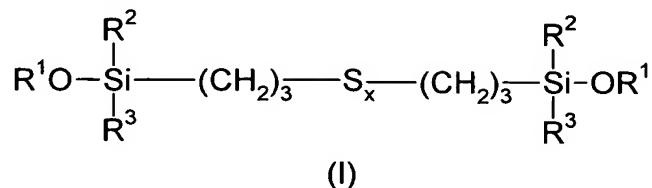
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53. The process according to Claim 52, wherein the carbon black is present in an amount within a range from about 5 to about 15 phr.

54. The process according to Claim 42, wherein the maximum kneading temperature is between about 130°C and about 180°C.

40

55. A sulfur-vulcanizable elastomeric composition based on a diene elastomer, a reinforcing inorganic filler and a bis-alkoxysilane tetrasulfide wherein said alkoxysilane satisfies the formula (I):



5 in which:

the symbols R^1 , which may be identical or different, each represent a monovalent hydrocarbon group selected from among the group consisting of alkyls, whether straight-chain or branched, having from 1 to 4 carbon atoms, and alkoxyalkyls, whether straight-chain or branched, having from 2 to 8 carbon atoms;

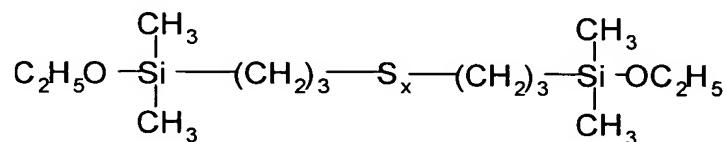
R^2 and R^3 , which may be identical or different, each represent a monovalent hydrocarbon group selected from among the group consisting of alkyls, whether straight-chain or branched, having from 1 to 6 carbon atoms, and the phenyl radical; and x is between about 3 and about 5.

15 56. The composition according to Claim 55, wherein:

the symbols R^1 are selected from among the group consisting of methyl, ethyl, n-propyl, and isopropyl;

20 R^2 and R^3 are selected from among the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, n-hexyl, and phenyl.

57. The composition according to Claim 56, wherein the alkoxysilane is the bis-monoethoxydimethylsilylpropyl tetrasulfide of formula (III):



25 (III) (abbreviated to MESPT)

58. The composition according to Claim 57, wherein x is within a range from about 3.5 to about 4.5.

30 59. The composition according to Claim 55, wherein the diene elastomer is selected from among the group consisting of polybutadienes, natural rubber, synthetic polyisoprenes, butadiene copolymers, isoprene copolymers, and mixtures of these elastomers.

35 60. The composition according to Claim 59, wherein the butadiene or isoprene copolymers are selected from among the group consisting of butadiene-styrene copolymers, butadiene-

isoprene copolymers, isoprene-styrene copolymers, butadiene-styrene-isoprene copolymers, and mixtures of these copolymers.

61. The composition according to Claim 55, wherein the quantity of reinforcing inorganic
5 filler is between about 10 and about 200 phr and the quantity of alkoxy silane is between about
1 and about 20 phr.

62. The composition according to Claim 55, wherein the inorganic filler has a BET specific
10 surface area of between about 60 and about 250 m²/g.

63. The composition according to Claim 55, wherein the inorganic filler comprises between
15 about 50% and up to 100% silica.

64. The composition according to Claim 55, wherein the reinforcing inorganic filler is the
15 entire reinforcing filler.

65. The composition according to Claim 55, wherein the reinforcing inorganic filler is used
in mixture with carbon black.

66. The composition according to Claim 65, wherein the carbon black is present in an
20 amount of between about 2 and about 20 phr.

67. The composition according to Claim 66, wherein the carbon black is present in an
amount within a range from about 5 to about 15 phr.

68. The composition according to Claim 66, wherein said composition is vulcanized.
25